REMARKS

This Amendment and Response to Office Action is submitted in response to the non-final rejection of claims 1-26 in the November 15, 2007 Office Action ("11/15/07 Office Action").

Claims 1, 10, 13 and 26 have been amended and are fully supported by the specification of U.S. Application Serial No. 09/104,123, to which the present application claims priority. Accordingly, amended claims 1, 13, 10 and 26 (and claims dependent therefrom) are entitled to an effective priority date of June 24, 1998.

In claim 1, support for the limitation "from about 3 to about 4.5 weight percent Cu" is found, for example, at least at page 2, line 27 of the specification of application Serial No. 09/104,123 ("123 specification"), to which the instant application claims priority. Support for the limitation "Wherein the fracture toughness and strength of the alloy are both increased when increasing lithium from about 0.01 to about 0.8 weight percent." is found, for example, at least at page 13, line 16 - page 14, line 2 of the '123 specification as filed. "Fracture Toughness" is defined as the R-curve and discrete measures of fracture toughness obtained therefrom such as K_{R25} and is tested per ASTM E 561-94 "Standard Practice for R-Curve Determination" as supplemented by ASTM B 646-94. "Strength" is defined as tensile yield strength and is tested per ASTM E-8-96 "Standard Test Methods for Tension Testing of Metallic Materials".

In claims 10 13, support for the claim limitations "Ag" and "Zn" is inherent as "Ag" and "Zn" are the IUPAC-approved designations for "silver" and "zinc", respectively.

In claim 26, support for the limitation "from about 3 to about 4.5 weight percent Cu" is found, for example, at page 2, line 27 of the specification of application Serial No. 09/104,123 ("123 specification"), to which the instant application claims priority. A copy of the '123 specification as filed is attached as Exhibit A. Support for the limitation "Wherein the fracture toughness and strength of the alloy are both increased when increasing lithium from about 0.01 to about 0.8 weight percent." Is found, for example, at least at page 13, line 16 - page 14, line 2 of the '123 specification as filed. "Fracture Toughness" is defined as the R-curve and discrete measures of fracture toughness obtained therefrom such as K_{R25} and is tested per ASTM E 561-94 "Standard Practice for R-Curve Determination" as supplemented by ASTM B 646-94.

"Strength" is defined as tensile yield strength and is tested per ASTM E-8-96a "Standard Test Methods for Tension Testing of Metallic Materials".

Accordingly, no new matter is added.

Claims 2 - 9, 11 - 12, 14 - 24 and 26 remain pending without further amendment.

Continued Examination Under 37 CFR 1.114

Applicants appreciate the Examiner's withdrawal of the finality of the July 9, 2007 Office Action in light of Applicant's request for continued examination and amendment filed by Applicant on October 9, 2007 ("10/9/07 RCE"). Applicants additionally appreciate the Examiner's determination that no new matter had been added to amended claims 1, 18, 19, and 26 in the 10/9/07 RCE.

Rejection Of Claims Under 35 U.S.C. 102(a), (e) and/or 103(a) re: Rioja '154

Claims 1-6, 8, 9, 18-21, 25 and 26 stand rejected under 35 U.S.C. 102(a) or (e) as being anticipated by Rioja (US 6,562,154)("Rioja '154"), and Claims 7, 10-17, and 22-24 under 35 U.S.C. 103(a) stand rejected as being obvious over Rioja '154. Paragraph 12 of the 11/15/07 Office Action states as follows:

> The examiner disagrees that the instant claims are fully supported by parent application 09/104123. At least the Cu range of instant claim 1 of about 3-5% Cu. is not found in the parent application, which mentions up to about 4.5% Cu is present (page 2, line 27, claim 1, etc). Therefore, the rejection in view of Rioja'154 has not been overcome.

Then-pending claims 1-26 were initially rejected over Rioja '154 in the July 9, 2007 Office Action. Applicants initially attempted to demonstrate that the limitations of then-amended Claims 1-26 were fully supported by the specification of application Serial No. 09/104,123 in the 10/9/07 RCE. However, the Examiner stated that the '123 specification only supports a Cu range of up to about 4.5% Cu (for example, at page 2, line 27).

In response, Applicants have amended claims 1 and 26 of the instant application so as to recite a Cu range of about 3- 4.5%. Support for this limitation is found, for example, at page 2, line 27 of application Serial No. 09/104,123. In light of the fact that the instant claims are now fully supported by application Serial No. 09/104,123, as detailed above, **claims 1-24 and 26 as pending are entitled to an effective filing date of June 24, 1998** -- the current application priority claim as a continuation-in-part application of the '123 application. For this reason, **U.S. Patent No. 6,562,154 ("Rioja '154") with a filing date of June 12, 2000 is NOT a prior art reference to the pending claims.** Consequently, Rioja '154 has been removed as a prior art reference as to Claims 1 -26, whether under 35 U.S.C. §102(a) or 35 U.S.C. §103(a).

Withdrawal of the rejections of claims 1-6, 8, 9, 18-21, and 26 under §§102(a) and (e) and claims 7, 10-17, and 22-24 under §103(a) over Rioja '154 and made of record in the 11/15/07 Office Action is respectfully requested.

Rejection Of Claims 1-15 and 18-25 under 35 U.S.C. 103(a) re: Pickens '003

Claims 1-15 and 18-25 stand rejected under 35 U.S.C. 103(a) as obvious in view of U.S. Patent No. 5,255,003 ("Pickens '003"). The Examiner rejected Claims 1-15 and 18-25 based on the rationale that:

> (1) "the alloy taught by Pickens substantially overlaps the instant alloy composition" (11/15/07 Office Action at page 6);
>
> (2) "the prior art is silent concerning the relationship of strength & toughness by virtue of the addition of Li- **and as compared to the same alloy without Li.**" (*Id.* at page 11 (emphasis added)); and
>
> (3) "Concerning the amended limitation of **fracture toughness being at least maintained while strength is improved** by virtue of the addition of Li, and **compared to the same alloy without Li addition (slope of strength/toughness graph is at least flat)"** ...
>
> "it is not clear that the prior art does not teach the amended improvement and as compared to an alloy **with 0% Li**" (*Id.* at pp. 6, 11 (emphasis added)).

In response, Applicants have amended Claims 1 and 26 so as to require:

(1) that **both fracture toughness and strength of the alloy improve** upon addition of lithium; and

(2) that the slope of the strength/toughness graph is positive when comparing alloys that **both contain lithium.**

As the relationship of increased fracture toughness and strength upon addition of at least some amount of lithium is not taught or suggested by Pickens '003, withdrawal of this grounds for rejection is respectfully requested in view of amended claims 1 and 26.

Increase Of Both Toughness And Strength When Increasing Lithium Content Is Not Taught Or Suggested By Pickens '003

The Examiner has previously observed that the relationship of increased toughness and strength upon addition of lithium is not taught or suggested by Pickens '003.

Amended Claims 1 and 26 submitted in the 5/1/07 Supplemental Amendment included the following limitation: "the strength/toughness relationship is positive for lithium addition to a given alloy".

In the 7/9/07 Office Action, the Examiner interpreted this phrase as follows:

> Ex. 1 and Fig. 5 show that **both strength and toughness are improved** (slope of the strength/toughness graph of Fig. 5 is positive & increasing) by virtue of (low levels) of lithium added to a given alloy until a critical level of Li is achieved (Fig. 5, Examples, and see also [0027]). The examiner agreed **this relationship IS NOT TAUGHT BY THE PRIOR ART** of Pickens '003.

(11/15/07 Office Action at page 2)(citing 7/9/07 Office Action)(bold text added).

The Examiner further observed in the 7/9/07 Office Action that:

> The declarations under 37 CFR 1.132 filed February 12, 2007; April 24, 2007; and May 1, 2007; together with applicant's arguments and the instant amendment are sufficient to overcome the rejection of claims 1-26 based on Pickens '003. The examiner agrees that Pickens '003 does not teach or suggest the claimed Al-Cu-Mg-Li alloy, complete with a positive relationship of strength and toughness by virtue of a (relatively low) Li addition to a given alloy. More particularly, Pickens '003 teaches increasing Li decreases fracture toughness (Fig. 2, see also Ex. H and O in Tables 2 and 3), while the instant invention at Fig. 5, Table 4, etc. teaches increasing Li unexpectedly increases both fracture toughness and strength.

(7/9/07 Office Action at page 6).

In the 11/15/07 Office Action, the Examiner reiterated that "**it is clear that the prior art does not teach a positive relationship/slope of fracture toughness vs. strength relationship for the addition of (low) amounts of Li** (see response to Amendment paragraph 10 of "Final Rejection" mailed 7/9/07, cited at paragraph 14 of the 11/15/07 Office Action), **and that this positive relationship is unexpected**". (11/15/07 Office Action at page 11).

As detailed above, the discovery that increasing lithium content would increase both strength and toughness is not taught or suggested by Pickens '003.

Currently-Amended Claims 1 and 26 Require That Both Strength And Toughness Is Increased Upon Addition Of Lithium

The Examiner previously stated that the limitation "the strength/toughness relationship is positive for lithium addition to a given alloy" means that both strength and toughness are improved upon addition of low amounts of lithium (e.g. those disclosed in the invention as claimed and in the specification as filed) to a given alloy. This previously-noted characteristic of the claimed and disclosed invention is surprising in light of the well accepted inverse relationship between yield strength and toughness. As previously-submitted data demonstrate and as a general rule for Al-Cu-Mg-Li alloys under review, as strength is increased, the toughness decreases. As noted above, Claims 1 and 26 have been amended so as to place the claims in better condition for allowance by deleting the following limitation:

> Wherein the **fracture toughness of the alloy is maintained or improved** upon addition of lithium when compared to the same alloy having the same composition but **having no lithium component; and**
> Wherein the **strength of the alloy is improved** upon addition of lithium when compared to the same alloy having the same composition but **having no lithium component** (emphasis added)

and inserting the following limitation in its place:

> Wherein the **fracture toughness and strength of the alloy are both increased** when increasing lithium **from about 0.01** to about 0.8 weight percent. (emphasis added).

These amendments to Claims 1 and 26 are fully supported by the specification of the '123 application at least at page 13, line 6 - page 14, line 2. Independent claims 1 and 26 (and their corresponding dependent claims) as currently amended require:

(1) that **both fracture toughness and strength of the alloy improve** upon addition of lithium; and

(2) that the slope of the strength/toughness graph is positive when comparing alloys that **both contain lithium.**

In light of amended claims 1 and 26, Applicants submit that currently-amended Claims 1 and 26 (and claims dependent therefrom) are not obvious in view of Pickens '003. Withdrawal of this grounds for rejection is respectfully requested.

Rejection Of Claims 16, 17, and 26 Over Pickens '003 and Rioja et. al. 5,137,686

Claims 16, 17, 26 stand rejected under 35 U.S.C. 103(a) as obvious over Pickens'003 in view of Rioja et al (US 5,137,686 A).

Pickens'003 is discussed above. In light of the fact that neither Pickens '003 nor Rioja '686 teaches or suggests that an increase in the percentage of lithium present in an aluminum alloy increases both strength and fracture toughness, withdrawal of this grounds for rejection is respectfully requested.

Obviousness-Type Double Patenting re: Rioja '154

In Sections 9 and 10 of the November 15, 2007 Office Action, Claims 1-26 stand rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 - 103 of Rioja '154. In addition, the November 15, 2007 Office Action notes that the Terminal Disclaimer filed on October 9, 2007 does not contain the signature of an attorney of record.

In response, upon indication of allowable subject matter, applicant will submit an appropriate Terminal Disclaimer, if necessary.

ASTM Standards

At Paragraph 15 of the 11/15/07 Office Action, the Examiner requested copies of ASTM standards used to define "Fracture Toughness" and "Strength". In response, Applicants here attach copies of ASTM E 561-94 "Standard Practice for R-Curve Determination" (Exhibit B), B 646-94 (Exhibit C), and ASTM E 8 - 96a "Standard Test Methods For Tension Testing Of Metallic Materials" (Exhibit D). Withdrawal of this grounds of rejection is respectfully requested.

Conclusion

It is respectfully submitted that the showing of priority to the '123 application as filed and the amendments to independent claims 1 and 26 address the patentability of the pending claims. In addition, the amendment of Claims 1 and 26 to include the limitation "Wherein the fracture toughness and strength of the alloy are both increased when increasing lithium from about 0.01 to about 0.8 weight percent" addresses the Examiner's concern expressed in the 11/15/07 Office Action that "it is not clear that the prior art does not teach the amended improvement and as compared to an alloy with 0% Li".

In view of this amendment and response, the Examiner is respectfully requested to reconsider the application at an early date with a view towards issuing a favorable action thereon. If upon review of the application, the Examiner is unable to issue an immediate Notice of Allowance, the Examiner is respectfully requested to telephone the undersigned attorney with a view towards resolving any outstanding issues.

Early and favorable action is earnestly solicited.

If any additional fee is due, the amount of such fee may be charged to Deposit Account No. 01-1000, Ref. No. 97-2301.

Respectfully submitted,

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